AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A method of determining an analyte concentration in a sample, the sample comprising the analyte and a substance, the method comprising:

providing absorption data of the sample;

providing reference absorption data of the substance;

calculating a substance contribution of the absorption data, wherein calculating the substance contribution comprises scaling the reference absorption data by multiplying the reference absorption data by a scaling factor, the scaling factor; ~~and~~

subtracting the substance contribution from the absorption data of the sample, thereby providing corrected absorption data of the analyte substantially free of a contribution from the substance;

using the corrected absorption data to calculate analyte concentration in the sample; and

providing the analyte concentration to a user.

2. (Original) The method of Claim 1, wherein providing the absorption data of the sample comprises:

providing transmittance data of the sample; and

determining the absorption data from the transmittance data.

3. (Original) The method of Claim 2, wherein providing the transmittance data of the sample comprises:

transmitting at least a portion of an infrared signal through the sample, the infrared signal comprising a plurality of wavelengths; and

measuring the portion of the infrared signal transmitted through the sample as a function of wavelength.

4. (Original) The method of Claim 3, wherein providing the transmittance data further comprises placing the sample in a cuvette.

5. (Original) The method of Claim 2, wherein the sample comprises blood.

6. (Original) The method of Claim 5, wherein the analyte comprises glucose, and the selected transmittance wavelength range comprises wavelengths at which the transmittance data is dominated by water transmittance.

7. (Original) The method of Claim 2, wherein the sample comprises plasma.

8. (Original) The method of Claim 7, wherein the analyte comprises glucose, and the selected transmittance wavelength range comprises wavelengths at which the transmittance data is dominated by water transmittance.

9. (Cancelled)

10. (Previously Amended) The method of Claim 1, wherein the substance comprises water.

11. (Previously Amended) The method of Claim 1, wherein the substance interferes with determining the analyte concentration.

12. (Original) The method of Claim 11, wherein the sample further comprises a second substance which interferes with determining the analyte concentration to a lesser extent than does the substance, the method further comprising calculating a second substance contribution of the absorption data and subtracting the second substance contribution from the absorption data, thereby providing twice-corrected absorption data substantially free of contributions from the substance and from the second substance.

13. (Previously Amended) The method of Claim 1, wherein the reference absorption data is corrected for temperature-dependent effects.

14. (Currently Amended) A method of determining an analyte concentration in a sample, the sample comprising the analyte and a substance, the method comprising:

providing absorption data of the sample;

providing reference absorption data of the substance;

calculating a substance contribution of the absorption data, wherein calculating the substance contribution comprises scaling the reference absorption data by multiplying the reference absorption data by a scaling factor;~~ and~~

subtracting the substance contribution from the absorption data of the sample, thereby providing corrected absorption data of the analyte substantially free of a contribution from the substance, wherein the reference absorption data is corrected for wavelength-dependent nonlinearities; and

storing the corrected absorption data in a memory.

15. (Original) The method of Claim 14, wherein the sample is contained within a sample element and the wavelength-dependent nonlinearities are generated by scattering from the sample element.

16. (Original) The method of Claim 14, wherein the sample is contained within a sample element and the wavelength-dependent nonlinearities are generated by fringing from the sample element.

17. (Previously Amended) The method of Claim 1, wherein scaling the reference absorption data utilizes at least two wavelength ranges.

18. (Original) The method of Claim 1, wherein the sample comprises a second substance, and the method further comprises subtracting a second contribution corresponding to the second substance from the corrected absorption data, thereby providing twice-corrected absorption data substantially free of contributions from the substance and from the second substance.

19. (Original) The method of Claim 18, wherein subtracting the second contribution comprises:

providing second reference absorption data corresponding to the second substance;

scaling the second reference absorption data by multiplying the second reference absorption data by a second scaling factor; and

subtracting the scaled second reference absorption data from the corrected absorption data, thereby providing the twice-corrected absorption data.

20. (Original) The method of Claim 19, wherein the second substance comprises a whole blood protein.

21. (Original) The method of Claim 19, wherein the second substance comprises components of a boundary layer between water and a whole blood protein.

22. (Original) The method of Claim 19, wherein the second substance comprises urea or lactate.

23. (Original) The method of Claim 18, further comprising fitting the twice-corrected absorption data with analyte spectral data, thereby yielding a measurement of the analyte concentration in the sample.

24. (Original) The method of Claim 23, wherein the twice-corrected absorption data is fitted with reference analyte spectral data.

25. (Cancelled)

26. (Cancelled)

27. (Currently Amended) A method of providing measurements of constituents in a sample using infrared (IR) spectroscopy, the method comprising:

providing absorption data of the sample, wherein providing absorption data comprises:

placing the sample in a cuvette having a shape;

passing IR radiation through a filter having a finite width;

irradiating the cuvette with the IR radiation; and

detecting a fraction of the IR radiation transmitted through the cuvette and the sample; ~~and~~

correcting the absorption data for a non-analyte contribution to the absorption data, wherein the non-analyte contribution is from the finite width of the filter; and

providing the corrected absorption data to a user.

28. (Cancelled)

29. (Cancelled)

30. (Currently Amended) A method of providing measurements of constituents in a sample using infrared (IR) spectroscopy, the method comprising:

providing absorption data of the sample, wherein providing absorption data comprises:

placing the sample in a cuvette having a shape;

passing IR radiation through a filter having a finite width;

irradiating the cuvette with the IR radiation; and

detecting a fraction of the IR radiation transmitted through the cuvette and the sample; ~~and~~

correcting the absorption data for a non-analyte contribution to the absorption data, wherein the non-analyte contribution is from the shape of the cuvette; and

storing the corrected absorption data in a memory.

31. (Previously Amended) The method of Claim 30, wherein the sample comprises blood.

32. (Previously Amended) The method of Claim 30, wherein the sample comprises plasma.

33. (Currently Amended) A method of using infrared (IR) spectroscopy to determine a ratio of an analyte volume to the total volume of a sample comprising the analyte, a first substance, and a second substance, the method comprising:

providing absorption data from the sample for a first set of wavelengths in a wavelength region where a first-substance absorption dominates;

calculating a first quantity equal to the product of a first-substance volume concentration and a path length of the sample;

providing absorption data from the sample for a second set of wavelengths in a wavelength region where the first-substance absorption and a second-substance absorption dominate;

calculating a second quantity equal to the product of a second-substance volume concentration and the path length of the sample;

providing absorption data from the sample for a third set of wavelengths in a wavelength region where the first-substance absorption, the second-substance absorption, and an analyte absorption dominate;

calculating a third quantity equal to the product of an analyte volume concentration and the path length of the sample; ~~and~~

calculating a ratio of the third quantity divided by the sum of the first quantity, the second quantity, and the third quantity to achieve a pathlength-independent quantity; and

storing the ratio in a memory.

34. (Original) The method of Claim 33, wherein the analyte comprises glucose.

35. (Original) The method of Claim 33, wherein the first substance comprises water.

36. (Currently Amended) The method of Claim 33, wherein the second substance comprises hematocrit soup.

37. (Original) The method of Claim 33, wherein the second substance comprises hemoglobin.

38. (Original) The method of Claim 33, wherein the second substance comprises red blood cells.

39. (Original) A method of determining non-analyte contributions to absorption data from a sample, the method comprising:

(a) inputting transmission measurements, filter parameters, and water spectral properties;

(b) calculating optical densities and filter constants;

(c) estimating non-linear filter terms and cuvette distortion matrix elements;

(d) solving for a temperature change as a function of the path length; and

(e) calculating new estimates of absorption and non-linear terms.

40. (Original) The method of Claim 39, further comprising repeating (d) and (e) until the solution converges to a desired accuracy.

41. (Original) The method of Claim 39, wherein the sample comprises blood.

42. (Original) The method of Claim 39, wherein the sample comprises plasma.

43. (Original) A method of determining non-analyte contributions to absorption data from a sample, the method comprising:

(a) inputting transmission measurements, filter parameters, and water spectral properties;

(b) calculating optical densities and filter constants;

(c) estimating non-linear filter terms and cuvette distortion matrix elements;

(d) solving for a temperature change as a function of the path length; and

(e) calculating new estimates of absorption and non-linear terms.

44. (Original) The method of Claim 43, further comprising repeating (d) and (e) until the solution converges to a desired accuracy.

45. (Currently Amended) A method of evaluating analyte concentration errors in absorption data from a sample, the method comprising:

calculating transmission and optical densities at four wavelengths for a water-filled cuvette, the four wavelengths comprising two wavelengths dominated by absorption by water, an analyte reference wavelength, and a measurement wavelength;

using the optical densities to determine the water content at the analyte reference wavelength and the measurement wavelength;

calculating expected optical density values at the analyte reference wavelength and the measurement wavelength;

calculating residuals between the exact and calculated optical densities at the analyte reference wavelength and the measurement wavelength; ~~and~~

determining the analyte concentration error by calculating the analyte concentration consistent with the difference between the residuals at the analyte reference wavelength and the measurement wavelength; and

storing the analyte concentration error in a memory.

46. (Original) The method of Claim 45, wherein the sample comprises blood.

47. (Original) The method of Claim 45, wherein the sample comprises plasma.

48. (Original) The method of Claim 45, wherein the analyte comprises glucose.

49. (Currently Amended) A method of determining an optical pathlength of a sample comprising water and a whole blood protein, the method comprising:

measuring an optical absorption of the sample at an isosbestic wavelength; ~~and~~

calculating the optical pathlength of the sample from the optical absorption; and

providing the optical pathlength to a user.